

15992 U.S. PTO
09/17/03

UTILITY PATENT APPLICATION TRANSMITTAL

(New Nonprovisional Applications Under 37 CFR § 1.53(b))

Attorney Docket No.
ATHEP128

TO THE COMMISSIONER FOR PATENTS:

Transmitted herewith is the patent application of () application identifier or (X) first named inventor, Won-Joon Choi, entitled REPETITION CODING FOR A WIRELESS SYSTEM, for a(n):

- (X) Original Patent Application.
- () Continuing Application (prior application not abandoned):
() Continuation () Divisional () Continuation-in-part (CIP)
of prior Application No. _____, filed _____.
- () Please add after the title of the application "This is a
() Continuation () Divisional () Continuation-in-part (CIP)
of Application No. _____, filed _____, which is hereby incorporated by reference."
- () This application claims the benefit of U.S. Provisional Application No. _____ filed _____

Enclosed are:

- (X) Specification; 19 Total Pages. (X) Drawing(s); 5 Total Sheets.
- () Oath or Declaration:
() A Newly Executed Combined Declaration and Power of Attorney:
() Signed. () Unsigned. () Partially Signed.
- () A Copy from a Prior Application for Continuation/Divisional (37 CFR § 1.63(d)).
() Signed Statement Deleting Inventor(s) Named in the Prior Application. (37 CFR § 163(d)(2)).
- () Power of Attorney. (X) Return Receipt Postcard.
- () Associate Power of Attorney. () A Check in the amount of \$_____ for the Filing Fee.
- () Preliminary Amendment. () Information Disclosure Statement and Form PTO-1449.
- () A Duplicate Copy of this Form for Processing Fee Against Deposit Account.
- () A Certified Copy of Priority Documents (if foreign priority is claimed).
- () Statement(s) of Status as a Small Entity.
- () Statement(s) of Status as a Small Entity Filed in Prior Application, Status Still Proper and Desired.
- (X) Request and Certification.
- () Other: _____

PLEASE DO NOT CHARGE THE FILING FEE AT THIS TIME.

Respectfully submitted,

By: Scott S. Kokka

Scott S. Kokka, Reg. No. 51,893

Date: September 17, 2003

Correspondence Address:

Customer No. 21912
Van Pelt & Yi LLP
10050 N. Foothill Blvd.
Suite 200
Cupertino, CA 95014
Telephone: 408-973-2585
Fax: 408-973-2595

I hereby certify that this is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated below and is addressed to:

Mail Stop Patent Application
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

By: Pat Tate

Typed Name: Pat Tate

Express Mail Label No.: EV323816081US

Date of Deposit: September 17, 2003

17497 U.S. PTO
10/666952
09/17/03

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:)	Attorney Docket No.
)	
CHOI, et al)	Examiner: Unassigned
)	
Application No: Unassigned)	Art Unit: Unassigned
)	
Filed: Herewith)	
)	
Title: REPETITION CODING FOR)	
A WIRELESS SYSTEM)	
_____)	

REQUEST AND CERTIFICATION
UNDER 35 U.S.C. 122(b)(2)(B)(i)

Mail Stop Patent Application
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

I hereby certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral agreement, that requires publication at eighteen months after filing. I hereby request that the attached application not be published under 35 U.S.C. 122(b).

Respectfully submitted,



Scott S. Kokka
Reg. No. 51,893

Van Pelt & Yi
10050 N. Foothill Blvd.
Suite 200
Cupertino, CA 95014
Telephone: (408) 973-2585

Attorney Docket No.: ATHEP128

APPLICATION FOR UNITED STATES PATENT

REPETITION CODING FOR A WIRELESS SYSTEM

By Inventors:

Won-Joon Choi
529 Almanor Avenue
Sunnyvale, CA 94085-3512
A citizen of Republic of Korea

Qinfang Sun
529 Almanor Avenue
Sunnyvale, CA 94085-3512
A citizen of China

Jeffrey M. Gilbert
529 Almanor Avenue
Sunnyvale, CA 94085-3512
A citizen of the United States

Assignee: Atheros Communications, Inc.

VAN PELT & Yi LLP
10050 N. Foothill Blvd, Ste. 200
Cupertino, CA 95014
Telephone: 408-973-2595

REPETITION CODING FOR A WIRELESS SYSTEM

FIELD OF THE INVENTION

The present invention relates generally to a data transmission scheme for a wireless communication system. More specifically, a repetition coding scheme for a
5 wireless system is disclosed.

BACKGROUND OF THE INVENTION

The IEEE 802.11a, 802.11b, and 802.11g standards, which are hereby incorporated by reference, specify wireless communications systems in bands at 2.4GHz and 5 GHz. The combination of the 802.11a and 802.11g standards, written as the
10 802.11a/g standard, will be referred to repeatedly herein for the purpose of example. It should be noted that the techniques described are also applicable to the 802.11b standard where appropriate. It would be useful if alternate systems could be developed for communication over an extended range or in noisy environments. Such communication is collectively referred to herein as extended range communication. The IEEE 802.11a/g
15 standard specifies a robust data encoding scheme that includes error correction. However, for extended range communication, a more robust data transmission scheme at reduced data rates is required.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

5 Figure 1A is a diagram illustrating the data portion of a regular 802.11a/g OFDM packet.

Figure 1B is a diagram illustrating the data portion of a modified 802.11a/g OFDM packet where each symbol is repeated twice ($r=2$).

10 Figure 2A is a diagram illustrating a transmitter system with a repetition encoder placed after the output of an interleaver such as the one specified in the IEEE 802.11a/g specification.

Figure 2B is a diagram illustrating a receiver system for receiving a signal transmitted by the transmitter system depicted in Figure 2A.

15 Figure 3A is a diagram illustrating a transmitter system with a repetition encoder placed before the input of an interleaver designed to handle repetition coded bits such as the one described below

Figure 3B is a diagram illustrating a receiver system for receiving a signal transmitted by the transmitter system depicted in Figure 3A.

Figures 4A-4C are tables illustrating an interleaver.